HARBISON'S

CALIFORNIA ADJUSTABLE COMB HIVE,

PATENTED BY

J. S. HARBISON,

January 4, 1859.

A Silver Medal was awarded to this, as the best hive, by the State Agricultural Society, of California, in August, 1858.

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PREFACE.

In presenting this little treatise to the public, I would say in justice to myself that it has been very hastily written, the first few pages was intended (in fact has been used) as a circular or advertisement for Harbison's Improved Movable Comb Bee Hive, but at the solicitation of quite a number of bee keeping friends who were anxious to learn something more of the modus operandi of transfering bees, subduing or taming them, rearing queens, protection against being stung, and an easy and sure mode of increasing bees by artificial swarms, and being unwilling to wait until I had time to prepare a much larger treatise, and get published as I design doing at an early day. I concluded to add a few pages to our circular, giving a few plain simple directions for performing some important operations, necessary to the proper management of bees, and issue a small edition, and let it go before the public for what it is worth, hoping and expecting ere long to offer a treatise, embracing some discoveries which we have made and practised successfully in California for propagating bees rapidly, and increasing the yield of honey, which is equally well adapted to bee keeping in any part of the world. I have also a very interesting article written by the Rev. Mr. Shuck, who was a missionary for twenty years in China, giving some very curious accounts of bees and bee keeping in China, which I will present with pleasure. Bee keeping can and I have no doubt will ere long be made one of the most important and certainly one of the most profitable branches of rural economy; to accomplish this fully, provision must be made for their sustenance at certain seasons of the year, (and under peculiar circumstances) very much on the same plan generally practised to provide for the wants of other domestic stock, authors have been more willing to tell us of the large quantities of bees that might be kept, than to inform us how to make those we have already profitable, I trust I may be able to give some hints and suggestions on this point that may benefit bee keepers. In writing the present little book my object has been to impart to others a knowledge of my experience in bee keeping, and not to write a book replete, with well rounded sentences, for this I offer no apology and shall not complain, should it be severely criticised in a literary point of view.

W. C. HARBISON.

Chenango, Lawrence county, Pa.

Improved Movable-Comb Bee Hive.

Some of the advantages which this hive, possesses over other hives now offered to the public, are

1st. The shape and size (being fifteen inches square on the outside, by thirty inches high,) conforming to the natural habits and requirements of the bee, and economizing the animal heat of the colony better than any other shaped hive, its symmetrical shape presenting a pleasing and ornamental appearance in the apiary, as well as being easily and cheaply constructed.

2d. The convenient and very efficient mode of ventilating the hive through the graduated chamber, supplying a sufficient amount of air and excluding the light.

3d. The ease with which all filth that accumulates in the hive, or on the bottom board can be cleaned out, and moth or worms that may infest the colony may be dislodged and destroyed.

4th. The ease with which access can be had to the interior of the hive, by the peculiar manner in which the door and lid is arranged, giving free access to every part of the hive, and when closed it is free from water running into and standing in the joints, as is the case where a cap is set in a rabbet or groove.

5th. The great improvement on frames, combining the movable comb principle with the adjustable, or so constructing the frames, as to suit any sized

comb in transferring from common hives, by moving the adjustable bar up or down, and providing the frames with flexible metallic clamps to hold the combs in their proper place.

6th. The very convenient method of adjusting the frame, to secure the proper space between the combs at all times, and fixing them in a perpendicular position and retaining them firmly and immovably in their proper place, and yet being easily removed when desired.

7th. The general construction of the hive is such as to permit the removal of any, or all the combs of a hive with ease and dispatch, thereby enabling the apiarian to increase his stock of bees by division or artificial swarms at pleasure, he can also supply queenless colonies with embryo queens or combs which contain new laid eggs or young larva, from which they will rear queens—it also affords ample facilities to examine the condition of each at any period of the year, and when necessary equalize the stores of honey and pollen, by taking combs from those having plenty and exchanging with those having but a limited supply, thereby ensuring the success of all the stocks in the apiary.

8th. The honey board is so arranged as to prevent the queen ascending to the spare honey receptables, where she frequently deposits eggs, in combs that should be filled only with a pure article of honey, queens frequently ascend when openings are left above the principle breeding department, and are often lost in removing the boxes of honey, thereby endangering the prosperity of the entire colony, this danger is entirely obviated by using our hive.

9th. The sectional honey box, composed of eight separate rings or frames, provided with comb guides (each of which will contain a single comb,) so ar-

ranged that all can be fastened together by clamps or strips, forming a perfect box which if desired for retailing in market, or for private use can be easily subdivided into small parcels of from one pound upwards, to suit the wants of the purchaser, without cutting or in any way breaking a single cell of honey, thereby saving any loss by leakage—by this plan the animal heat is econimized and yet secures all the advantages of having honey stored in small parcels.

These are some of the principle advantages which are peculiar to this hive, and which we think renders it worthy of the notice of all bee-keepers. We think the facts in the case will justify us in assuming that it combines more real practical advantages than any other hive which we have had the pleasure of examining, (and would just say here, we have but recently made a careful examination of every model in the patent office, whether patented or rejected, and therefore have a knowledge of all the varied forms and combinations which have been presented to the public.)

The peculiarities and advantages of our hive, are such as have been suggested from time to time through a long series of years of practical and successful bee-keeping, on both a small and large scale, in the Atlantic States and in Califorinia—having been raised, as it were in the apiary and instructed in the science of bee-keeping from our earliest recollection, we were prepared to enter upon it with reasonable certainty of success, when we set out to do business on our own account. The favorable results that have attended our management of bees for a series of years in the Atlantic States, and in our successful shipping of two large lots of bees, over five thousand miles, through all the changes and vicissitudes of climate, incident to a voyage to California, and our eminent success in propogating

and increasing them there, and in their general management, &c. This we apprehend is *prima facia* evidence that we know something of the nature and habits of the honey bee, and know what is required to constitute a perfect practical hive, which will afford the apiarian the greatest facilities for managing bees in the most skillful and scientific manner.

We would not risk our reputation as apiarians by presenting a hive to the public of a questionable character, or one whose principles were based on theory alone, but we present one that we have thoroughly tested in every particular, and can cheerfully and confidently recommend to the public, all we ask for it is a fair, judicious, and careful trial, we are willing and desirous to have its merits tested side by side, with any or all other hives now in use, or that may be offered hereafter, we apprehend that we have nothing to fear for the result.

A word respecting our patent on the adjustable or movable frames. It has been intimated from certain quarters, that our patent for the peculiar form in which our frame is constructed and used, is an infringement on the Rev. L. L. Langstroth's patent. Injunctions and lawsuits have been threatened to frighten timed persons from using our hives, &c. We would simply say that the movable frame, made for the purpose of containing and removing a single comb without interfering with any other part of the colony, is an old invention; Huber, the celebrated apiarian of Europe, gives a full description, with drawings illustrating in his work on bees, a frame used by him as early as the year 1804 or 1805—a copy of which work can be found and examined in the library of the Patent Office. Huber's frame is composed of four pieces one inch thick, the sides or upright pieces are twelve inches long, the ends or top and bottom is ten inches long and

one and one-fourth inch wide; nine of these frames were hinged together on the one side by hooks and eyes, to open or shut like the leaves of a book with shutters at the ends, these were all clamped together, constituting a hive of themselves, any frame of which could be removed at pleasure when full or for the purpose of making artificial swarms, empty frames being substituted in their place.

A full description and drawing of this frame and hive is also given by the celebrated Bevan, in his work on the honey bee, page 41, of the cheap edition. Now the Langstroth frame is simply a modification of the Huber frame, or properly speaking, an improved method of using it by suspending it (by a projection of the top piece beyond the sides,) in a hive or box, leaving a space between each frame instead of placing them close together as in the Huber hive, now according to the ruling of the Supreme Court of the United States, in parallel cases, Mr. Langstroth, or those interested in his patent, are justly entitled to hold and use his improvements. On an old, well defined principle, an invention that was long since common property, but no legal rights whatever exists to prevent others from improving upon the same invention, and having the benefits thereof without interference.

We claim an improvement in the mode of constructing, and using the frame—that is essentially different from any previous known device, yet for a similar purpose for which frames have long been used. For which improvements, letters patent, were granted January 4th, 1859. Under which we claim the exclusive right to make and use the frames as described and set forth in said patent, and the right to sell and convey the same to other parties, and will warrant and defend them against any and all interference from any quarter whatever.

The advantages which the movable comb principle presents to practical bee-keepers, is becoming so well understood and appreciated, that it is scarcely necessary to say a word more in its favor; however we will say that a greater increase of bees can be obtained, and a larger amount of honey stored, in short better returns can be had from these hives than from those constructed on any other principle; not because the bees are any more industrious in this hive than others, but because the apiarian can so control and manage his bees, as to have them build all their brood combs straight and regular by equalizing his stocks, to have all alike strong and induce them to rear the largest possible number of young bees, in time for the honey harvest, having the greatest force when most needed, thereby saving much valuable time.

We have had an average increase in California, from imported stocks, the present year of five new colonies or artificial swarms from each old stock and all in good condition. To obtain such an increase requires great care and skillful management feeding occasionally when honey is scarce—in fact careful feeding during a scarcity of honey, is the key to successful and profitable bee keeping.

In presenting this hive to the public at this time, we would say, we are getting up plates to illustrate the different parts of the hive in detail, which we will employ, in a work we are preparing, in which we will give a full description of the hive, with ample directions for making and using it together with full instructions for increasing bees by artificial swarms, and directions for procuring the largest amount of honey and also for the general and special management of bees. This work we expect to have ready for distribution in the spring of 1860, in the mean time we would suggest to persons desir-

ing to make hives, to procure a complete hive as a pattern—we can send hives by express to any part of the United States.

How to Conquer Bees and Prevent Them from Stinging.

When bees are alarmed for the safety of their stores, they immediately rush to the cells and fill their sacks with honey, apparently to provide against any contingency that might arise. When in this condition they are perfectly harmless, never volunteering an attack, consequently to tame bees or render them docile and easily driven or handled, simply take advantage of this peculiar instinct.

To confine them closely to their hive and rap repeatedly on its sides for a few minutes, this alarms them, and they will gorge themselves with honey, when they can be handled and controled at pleasure.

But we have adopted the following plan which we find best adapted to our hive, and recommend it to others with the assurance that it will give satisfaction.

Take clean cotton or linen rags, such as is used in the manufacture of paper, make a nice roll of these, about an inch in diameter and from six to twelve inches long, wrap this pretty tight either with narrow strips or shreds torn from pieces of cloth, or what is more convenient use wrapping yarn of some kind, prepare a number of such rolls and keep on hand in some box or any dry place, (in or near the apiary,) together with some matches, when you wish to open a hive or perform any operation, set fire to one end of a roll of rags, it makes quite a smoke without any blaze, upon opening the hive blow the smoke vigorously among the bees for a

minute or two which terrifies them without doing any permanent injury, they immediately rush to the cells and fill their sacks with honey, when you can proceed to lift out one comb after another and perform any operation with perfect impunity, without any fear of being stung, unless by those from other hives near at hand, should there be some however that would show signs of battle, blow a little more smoke upon them, and repeat it from time to time until the close of the operation.

Towards the close of the honey season when they are rich and increased in stores, they are harder to control than at any other season of the year, when this occurs put a small portion of tobacco, or a few grains of sulphur in your roll of rags, this renders the smoke more pungent and will drive them with perfect ease.

Protection.

It is said, "An ounce of prevention is better than a pound of cure," all persons are liable to be stung in hot weather when passing near their bees, when cleaning filth from the bottom of the hive, removing worms or changing honey boxes, or anything of this kind, this causes many persons to neglect their bees and thereby consign them to the tender mercies of the moth, the fear of being stung deters many persons from keeping bees, this can easily be prevented and one of the greatest objections to bee keeping removed, simply by using a vail or screen to protect the face and neck and gum elastic or buckskin gloves to protect the hands.

Take silk bobinet, (green) if it can be obtained, take a piece about two feet in width by about four and one-half in length, gather the edge or side of

this into a band that will slip over the crown of the hat down to the brim, suspending it over the edge of the brim all around the face and neck, attach a tape or string at the back part near the lower edge, pass this around so as to confine the vail to the coat or vest collar, and fasten beneath the chin, by wearing a broad brim summer hat, it keeps the vail from coming in contact with any part of face and effectually protects it, this vail can be easily carried in the coat pocket, or kept in some convenient place for instant use, and when used it obstructs the vision but little, and does not injure the eye by continued use, other kinds of bobinet or even such stuff as is commonly used for mosquito bars may be used in the same manner, the cost of which would be less than silk, we have used hats made of fine wire cloth, but have discarded them for two reasons, the first is, to wear one of these and be exposed to hot sun, (is disagreeable and even dangerous,) as they afford but little protection from its rays, but the greatest objection is the injurious effect produced by the frequent use of the wire upon the eyes, the reflection of the rays of the sun from the wire soon produces an aching or painful sensation, and soon effects the sight, hence we prefer the vail, we would recommend all persons to provide several by getting cheap summer hats, and trimming them with vails, keep them in some convenient dry place near the entrance of the apiary, if any visitors who are fearful of being stung wishes to look into the apiary, they can don a screen or vail and examine all the curiosities without being stung, a sense of perfect security against the attacks of the bee, renders the most timid very courageous, in fact if it was generally understood that there is no actual necessity for being stung in the management of bees, ten would engage in it for one that does so at present.

How to Transfer.

Should you wish to transfer a colony from an ordinary hive, proceed as follows: invert your hive, place a box on the mouth of it, close up any apertures with a cloth or anything convenient to prevent the bees from getting out, then rap gently but repeatedly on the hive, continue this for sometime, the bees will gorge themselves with honey and ascend to the box, when you can gently remove it and let it stand until the combs are transferred to the new hive, the few bees that remain will give but little trouble, having all things in readiness, the frames provided with strips of tin one-fourth inch wide and two and one-fourth inch long, proceed to remove one side of the old hive to admit of cutting out the comb full size, without breaking or mutilating them, adjust the centre bar of the frame to suit the depth of the comb, cutting off any points or inequalities that exist in the comb, place the frame in a perpendicular position, put the comb in it, in a position similar to what it occupied in the old hive, bend the braces down on both sides and press them gently against the sides of the comb, now place it in the new hive, proceed in the same manner until all the combs are removed, carefully brushing off into the new hive any bees that may adhere to the combs, be careful to place all the combs containing either eggs or brood together side by side as near the centre as possible placing the store combs at the sides, when all is completed put in the sash, take the box containing the bees, brush or shake them down among the combs, brush them gently until all are below the tops of the frames then gently insert the chamber floor or honey board to prevent them from ascending, shut down the lid and close the door, raise the slide or shutter in the front, about a half inch, place the hive where the stragglers will be attracted by the sound of those in

their new home, in the morning set the new hive where the colony originally stood, otherwise many bees would be lost.

We prefer to transfer at night in a shop or room of mild or warm temperature, to prevent the brood from getting chilled during the operation, the bees will immediately proceed to clean up the dripping honey and fasten the combs, and by morning all smell of broken combs and fresh honey will be removed, thereby obviating the danger of exciting others to rob them ; however with proper care they can be transferred at any time of day, care should be taken in transferring when there is a limited supply of honey, as the elaboration of wax necessary to fasten the combs causes the bees to consume a much larger amount of honey than would otherwise be required, hence the necessity of feeding them under such circumstances.

To Rear Queens to supply Artificial Swarms.

It is a fact well attested, that to remove the Queen from a colony of bees when they are in possession of eggs, recently deposited in worker cells, or if they have larva not more than three or four days old, they will proceed to rear young queens as soon as they discover the loss of their old queen, to guard against accident they will usually rear from two to ten, and occasionally as many as fifteen or twenty young queens.

The queen cells are usually suspended from the edge of a comb or some projecting point, they commence by cutting out the partitions between two or three worker cells, and form a cup similar in size and shape to that of an acorn, in this they deposit

a substance similar to jelly, of a light or whitish color at first, but afterwards turns a brown or reddish color, this is called royal jelly, on this they deposit a worker egg or young larva, and continue to increase the length of the cell until it is about an inch long and about the sixth day they seal it up, when it resembles a peanut both in shape, size and color. After remaining sealed up from eight to twelve days, or from fourteen to eighteen days from the removal of the old queen—the time is varied by the temperature of the weather, in California they usually emerge from the cell about the fourteenth day, whilst in Pennsylvania in about the sixteenth or eighteenth—the first one to come forth will soon find her way to the cells containing her sister queens, and destroy them by cutting into the sides of the cells and inflicting a death wound (in her unsuspecting sister,) by stinging her.

When queens are wanted to supply artificial swarms or queenless colonies, the royal cells should be removed from the queen nursery three or four days before any emerges and placed in the colony where wanted. Providing queens in this manner, renders the propagation of bees by division or artificial swarms easy, and the result certain.

Making Artificial Swarms.

In the spring when stocks have become strong and a few drones have made their apperance, there being a plentiful supply of honey abroad, it is then a proper time to commence dividing. Three plans present themselves, either of which may be adopted and practiced successfully, the first of which is as follows;

A few days before you wish to make any considerable number of artificial swarms, divide one of your strong colonies, make an equal divide of bees, combs, honey and brood, this we call a preliminary divide, place an empty frame or two next to those containing the comb, take a piece of clean cloth, common brown sheeting muslin is as good as any, cut or tear in pieces thirteen inches wide by about twenty-seven long, put this over the top of the frames and suspend it over or down outside of the empty frame until it reaches the bottom board, this preserves the heat which is very essential, and condenses the space to correspond with the size of the colony, care should be taken in all cases to put the combs containing eggs or brood together, in the centre of the colony to prevent its getting chilled, let the bees adhere to the combs just as they are lifted from the hive, when the division is completed, if convenient close up one of the new colonies and take it a half mile or a mile distant, to a neighbors house or some suitable place, by so doing the old working bees will remain in each colony, just as when first divided, the one destitute of a queen will soon set to work to rear queens to supply there loss as has been described, they will work away just as contented and happy apparently so long as they have the means of supplying themselves with a queen, as if they were in possession of one, but during the time they are destitute they invariably build drone comb if they build any.

When it is not convenient to remove one of the colonies to a distance as has just been stated, shift the old hive sideways about the width of itself, and place the new one, on the opposite side of the old stand, so that each will occupy the same relative position to it, if you have observed in which hive the queen was put, close the entrance entirely to prevent those from the other hive finding her, or most

of the old workers that had been aboard and had their course established would return to her, which would endanger the success of the other colony if too many would leave it, and return to the one containing the queen, the brood would be chilled and destroyed, but when they are entirely cut off from their queen mother, and thrown entirely on their own resources, they set to work to construct queen cells, and in twenty-four hours time they will have their course to and from the new hive as well established as from the old one, when it can be opened—it is well however, to set up a board a little in front and between the hives for a few days—great care must be taken at all times to ventilate well when a hive is closed up.

In about ten or twelve days after the division was made, open the hive which contains the young or rather embryo queens, lift out the combs carefully, commencing at one side for there is danger of bruising or destroying the queen cells, which frequently project beyond the sides of the comb, take a sharp thin bladed knife, cut out a small piece of comb, say an inch square from which the queen cell was suspended, replace the comb again in the hive, and proceed immediately to divide another colony, in the manner just described for making a preliminary divide, being careful to find in which hive the queen is placed, now take the queen cell or embryo queen, cut a square hole in a central position in one of the combs, to correspond in size with the square piece to which the queen cell is attached, and insert it gently, being careful not to press or bruise it, press the wax of the surrounding comb down at the edges, to prevent it from falling out, the bees will soon fasten it permanently, care should be taken, to place the embryo queen in a position similar to where it was built, now place the comb in the centre of the colony, close it up, cover-

ing the frames with a cloth as has been directed, either remove the new colony to a half mile or more distant, or place it at one side of the old stand, as recommended in the preliminary divide, great care is necessary to prevent the embryo queen from getting chilled by cold during the process, she should not be exposed to a temperature below 70 degrees, and that for a short time only.

An expert apiarian will perform all this operation in a very few minutes, when one divide is thus completed, proceed as before, taking out another embryo queen and make another divide and still another, until all the embryo queens have been used except one, which is necessary to leave to supply the colony, which we may with great propriety call a queen nursery, we will suppose this colony reared six queen cells, five were removed and used to supply as many new colonies and one left, thus six new colonies are made with a fair prospect of having fertile queens in from twenty to twenty-six days from the date of the first divide, the time should be noted carefully, and if at the end of twenty-two to twenty-five days no eggs are found in the cells, the presumption is that some accident has happened the queen. Now open a hive which you know has a fertile queen, take out a comb containing brood, just emerging from the cells, and also having some eggs or young larva, the young bees will serve to strengthen up the colony, and the eggs will enable them to rear a queen, in case the previous one was lost, all new colonies should be carefully examined every few days, until they have a a fertile queen, this is known by the eggs found in the combs—in making all divides, empty frames should be put in the hives from time to time, as the building of combs progress until the hives are full,

Another Method of Making Artificial Swarms.

When stocks of bees are not so strong and vigorous as to divide in equal parts in the manner before described, and the apiarian being still desirous to increase his stock without reducing any one to a weak condition, it may be done very safely in the following manner.

Have a supply of embryo queens as already described, have your hive in readiness, take one or two frames of comb from each hive, containing a proportion of honey, pollen, brood, &c., examining each comb very carefully lest the queen should be removed, in this way a new colony is made up from two or three old ones, removing the bees that adhere to the combs, place an embryo queen or royal cell in one of the combs, place combs in all cases that contain brood as near the centre as possible, blow a little smoke among the bees, close up the hive covering the frames and bees before described with a cloth, remove them to a distance if possible, if the older workers return to their respective hives to any great extent, few will be left to carry on the affairs of the new colony, and sometimes they will almost cease to work for three or four days, until the number is increased by those emerging from the cells, or by taking bees from some other hive to strengthen it up, to remove new colonies of this kind to the distance of a mile is the most certain and least trouble, let them remain until the queen becomes fertile, when they can be returned to the apiary—bees unite very easily at the season of the year proper for making swarms.

I would again caution bee-keepers who make new colonies from two or more hives, to examine each comb with the greatest care, scrutinizing every bee closely to see that the old queen is left in her

own hive, by careless handling the queen might be removed from each of the old hives, and placed together in the new one, which would be a serious loss.

It is necessary in making all artificial swarms, to secure enough mature worker bees to protect the brood from the cold and attend to all the domestic affairs of the colony.

A Plan to Prevent Bees Leaving the New Colony and Returning to the Old.

When a new colony is made in either way just described, close the hive up to prevent any bees from escaping, being careful to ventilate properly lest they smother, take them to a dry cellar or some cool out house, let them stand quietly for from twenty-four to twenty-six hours, when they can be taken and set on the stand you wish them to occupy, open them invariably in the evening, a few minutes before sunset, (when but few bees are flying in the apiary,) when they rush out of the hive and find themselves in a new place, they will take their reckoning, noting carefully the objects surrounding their new habitation, and settle down quietly and go to work, very few returning to the old stand, this plan is convenient, easily understood, and we have found it to succeed very well, yet in making artificial colonies in all cases and under all circumstances, the older workers that have their course well established to the parent stand are likely to return, and should there not be enough younger bees to continue the operation of the new colony, it would be a failure, hence the necessity of looking in upon them every day disturbing them as little as possible, and if there is not bees enough to cover

the brood, open a strong hive take out one or more combs, after examining carefully that the queen is not on it, brush the bees into the deserted colony until you have enough to cover the combs, returning the combs from which you have brushed the bees, to their own hive, now close up the new colony and remove it away a mile or so, this will make a sure thing of it.

How to make Bees Profitable without Rapid Increase of Colonies.

To those who wish to secure a large yield of honey rather than an increase of colonies, we recommend the following plan. But to operate with ease and certainty, it is necessary to have the bees in our Improved Movable Comb Hives.

When they begin to work briskly in the spring, examine all your stocks carefully some fine warm day by lifting out each comb, should you find one scarce of honey and another having a good supply just exchange combs, being careful to brush off all the bees, each in their own hive, thus you will give a full comb of honey to the one that lacks, and replace it in the other with the empty comb, in this manner all the stocks in the apiary may be equalized. The strong heavy stocks may be benefited by removing one or two combs that contain only honey, providing they are fed as directed, but not otherwise. I would here protest against taking honey from hives at this season of the year, under the false apprehension that they have to much, this matter will be discussed in another place.

When the lower part of the hive is full of combs, well covered with bees, put the boxes to contain surplus honey into the chamber, in which they will

soon ascend and commence building if there is a plentiful supply of honey—if they have been properly fed as directed, are strong and vigorous to commence the honey harvest, they will fill from one to two set of honey boxes during its continuance, which will be from twenty-five to fifty pounds of surplus honey, and may perhaps cast off a swarm if permitted, the season being favorable—but in this latitude all after swarms should be prevented, by opening the old hive immediately after the first swarm issued, and removing all the young queens but one, this is much easier done and more effective than returning after swarms to the parent hive.

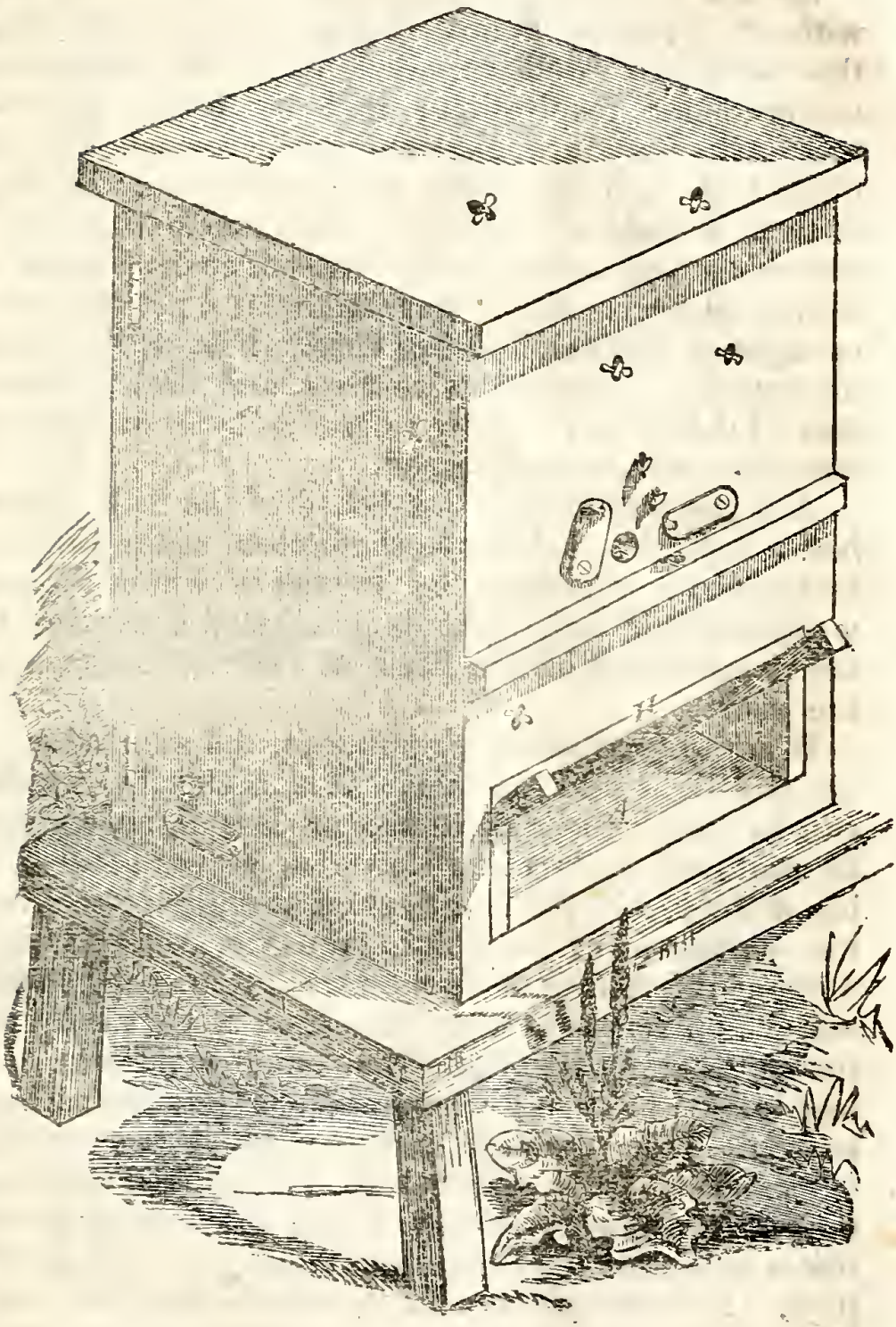
The young queen thus left to supply the old hive, is liable to accident when she takes her excusions abroad to meet the drones in the air, she may be caught by a bird, or may miss her way to her own hive on her return. I have on several occasions rescued young queens (with the marks of their amaurs upon them) at the entrance of the hives which I knew had fertile queens, where she would have been dispatched in a short time but for my timely aid, by a prompt and careful examination I have generally succeeded in finding the hive where she belonged.

Hence it is of great importance to gaurd against the loss of the queen, the old colony should be examined in about ten days after the swarm issued, and every two or three days from that time, and if no eggs are found by the eighteenth day, take a comb out of some hive having a fertile queen, with eggs and young larva in it, and give them in exchange for one of their empty brood combs, this will place the means within their reach to rear another queen in case the previous one failed, this can only be done successfully in a movable comb hive.

If bees swarm naturally and the hive has been examined, and the surplus embryo queens removed to prevent after swarming as has been directed on another page, let them stand for a period of from twelve to eigeteen days from the casting of the swarm, then examine, most of the brood will have matured and left the cell, the old queen having led (she invariably does) the first swarm, the young one left to supply her place, not yet being fertile the combs will be found empty or nearly so, a considerble time may and generally does elapse before the young queen becomes fertile, and is able to replenish those combs with eggs, hence much valuable time is lost, to remedy this and keep all rearing brood to the best advantage adopt the plan as directed under the head of How to Strengthen Artificial Swarms—simply change those combs from which the brood has emerged, where the colony which is destitute of a queen with a colony that has a fertile queen, the combs being well stored with brood eggs &c., being very careful to brush off all the bees from each, before making the change, lest the queens should both be put in the same hive, care must also be observed that no colony has more brood than they can keep warm and rear properly.

Permit me again to impress upon the mind of all bee keepers (who make artificial swarms or even change combs as has just been described,) the importance of keeping enough bees upon the brood combs, to keep the brood warm, and to nurse and bring it to maturity, otherwise the brood will inevitably perish, and ere long become a putred mass, entailing loss and disappointment upon the owner, with a reasonable degree of care however no danger need be apprehended.

Figure 1.



Specifications.

By the peculiar arrangement of this hive, air, without light, is admitted into the hive, so that the bees are well supplied with the necessary material for respiration; and by being kept in the dark, they are continually in repose, and require less food for their sustenance than if they were in a state of activity. This economizes their winter's store, and saves the lives of many bees who would otherwise die of starvation, and prevents the ravages of the neighboring bees. Fig. 1, in our illustrations, is a perspective view, and Fig. 2, a section of this hive; and by reference to them the construction will be understood.

A is the inclined bottom-board of the fifth chamber. It is elevated above the bottom of the hive, so as to form a chamber, by means of which the admission of air and light is graduated according to the requirement of the bees at different seasons of the year.

B is the graduating chamber for the admission of air and light into the hive. C is a curtain, which can be raised to admit more or less light, as may be required, and, when lowered, serves for throwing a shade about the air space, thereby preventing the entrance of light into the working-chamber without interfering with the ventilation of the same, and which serves to keep the bees in a state of repose a greater part of the time when unable to collect honey, or during windy and cold weather at any season. D is the cross-piece to which the curtain is attached. It is secured to the inclined bottom-board, A, at such a distance from the door as to allow a space for the admission of air and light to the hive. E is the passage for the admission of air and light to the hive, and F is a movable cross-piece, provided with two wire screens, G, for the purpose

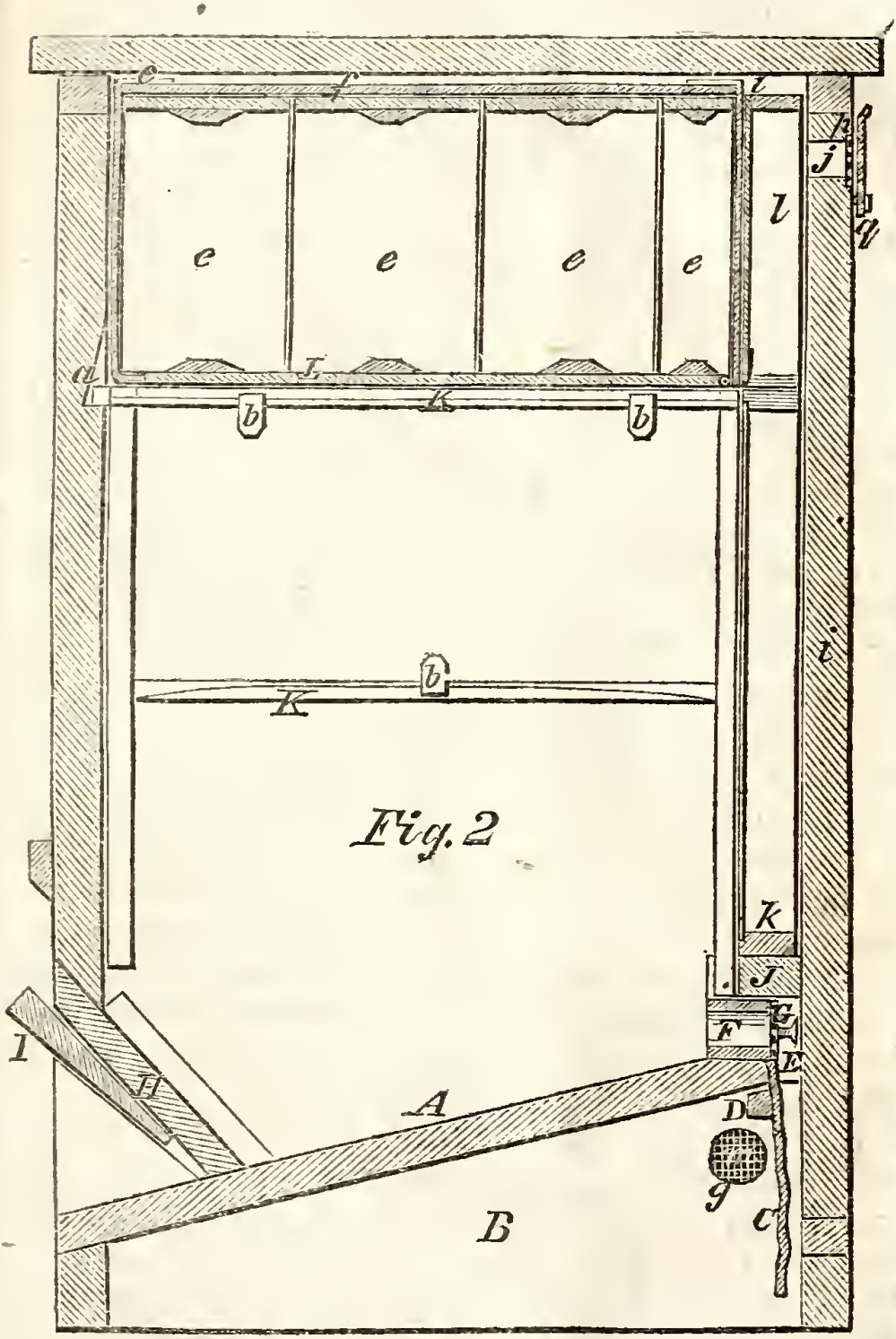


Fig. 2

of admitting the air and light, which ascend through the passage, E. H is an adjustable slide, which fits loosely in grooves on the sides of the hive, and provided with a wedge, I, for the purpose of tightening or loosening the same, said slide, H, being removed to admit the discharge of any impurities which may have collected on the inclined bottom-board, A. J is a cross-piece, mortised to admit the lower end of the sectional comb-frames, K, which has a tenon cut on its lower end, and which fits into the mortise cut in the cross-piece, J, and also has a projection on its upper part which fits into a slot, *a*, cut on the inner part of the front of the hive; by this means it is secured in its right position in the hive, the lower part of the sectional comb-frame, K, being adjustable up and down, by means of holes and pins, for adjusting it to the different-sized combs. By removing the honey-boxes, and bearing on the upper part of the sectional comb-frame, K, it can be elevated out of the slot, *a*, and the apiarian is thus enabled to remove or replace it with ease and facility without molesting the other bees, or in any way injuring the combs in the adjoining frames.

The sectional comb-frame, K, is provided with six or more flexible metal clamps, *b b*, secured to its upper and lower ends, which serve to retain the comb in the sectional comb-frame; and by raising the flexible metal clamps, *b b*, on one side of the frame, the apiarian can remove or replace a comb with facility and despatch.

L is the platform supporting the honey-boxes, and resting on the tops of the sectional comb-frames, K, of such a width as to allow a passage for the bees to the honey-box. The platform, L, is provided with a flexible back-angular clamp, and a flexible front-angular hinged clamp, both of which serve to brace the honey-boxes; *c c c* are the honey-boxes resting on the platform, L; *f* is the upper

coupling strap, fitting under the angles of the flexible angular-clamps, which completes the bracing of the honey-boxes.

By removing the coupling-strap, *f*, and folding down the flexible angular hinged clamps on L, the honey-boxes may be removed separately; and, by folding the flexible angular hinged clamp to its former position, and replacing the coupling strap, *f*, the honey-boxes may all be removed at once, thus affording great ease and facility for reaching the sectional comb-frames, K; *g* are apertures provided with wire screens, *m*, and movable covers, for the admission of air and light to the graduating chamber, B. There openings provided with movable covers for the ingress and egress of the bees; *i* is the door of the hive, provided with an opening, *j*, which is furnished with a wire screen, *p*, and movable cover, *q*, that serves to admit air and light to the upper part of the hive. K is a glass frame, resting on the cross-piece, J, and enclosing the sectional comb-frame, K, and *l* is a glass frame resting on the glass frame, *k*, and inclosing the honey-boxes, *e e e*.

How to Manage Bees in a Common Box Hive.

As it is quite improbable that all bee keepers who may chance to read this treatise, will adopt the use of our hive or indeed avail themselves of the advantages of any movable comb hive, however great the facilities they may present for the skillful and profitable management of their bees, prefering the old box hive either with or without boxes to obtain surplus honey. It may not be amiss to give some suggestions in regard to their proper management. The same general management of bees will hold

good with all kinds of hives, with this exception, in movable comb hives and all that class of hives used for increasing bees by dividing or. artificial swarms —a condition of things is brought about quite different from what naturally exist in the common hive that is left to take its own course, being permitted to swarm in the natural way, when the season and surrounding circumstances are favorable for this important event, it not unfrequently happens in some seasons that although bees swarm but little if any, yet in the latter part of the season they store a very large amount of surplus honey, thereby making a hansome income to the bee keeper upon his investment, although his stock may not be increased.

Early in the spring examine your stocks carefully, remove all the dead bees and filth of all kinds from the bottom board of the hive, or the board on which they stand, if opened at the bottom repeat this cleaning operation every few days, until the bees become so numerous as to occupy all the spaces between and around the lower edges of the combs, when they will generally keep themselves free from any further accumulation of filth, they should be fed in the chamber or upper part of the hive as has been directed in another chapter, being careful to feed with great regularity, if the hives are strong and reasonably heavy but a small amount need be feed each day. It would be well to blow a little smoke under the hive and turn them upside down and examine the combs towards the latter part of April, if any portion of them are found to be thick and black, a small portion should be cut off, few if any hives need any pruning until the fifth or sixth year from the time the swarm was first put into the hive, (those who advocate the renewing or new comb system to the contrary notwithstanding) and then it is only necessary to cut say five or six

inches off the lower ends of the combs, in which the most young bees have been raised, the store combs and even a part of the brood combs may be used a much longer time, particularly the upper part of the combs, we have seldom found it necessary to prune off more than one third of the combs at one time, the first time we prune a hive say six inches in height, combs thus renewed will do very well for four or five years longer, then they should be cut off up to the point where the honey and brood meet the upper part of the combs, (if the hive is, say twelve or fifteen inches in height in the clear,) for two or three inches in depth from the top is generally kept full of honey, unless in a season of great scarcity, combs so used will do very well for the purposes required for a long time—I know of several hives at this time having such combs in, that is but little less than twenty years old have been, and now are good thrifty productive stocks, the combs principally used for breeding in has been pruned in the manner I have described, perhaps three times during that period—it is a great error to suppose that combs should be cut out and renewed every year, or even every three or four years indiscriminately. If the hives are kept well covered and shaded from the sun during the hot weather in summer, bees will live and do well for a much longer time, than many writers would have us believe. To prune in the manner I have described early in the spring, be careful to feed, which will induce them to build new combs to fill up the vacancy, in a short time all will be full again.

I find in choosing the time for pruning, my experience differs from Mr. Quimbey's, perhaps this arises from the fact of his wintering bees in the house, which I cannot approve of or recommend for general practice, for reasons which I give in another place, I find our bees cluster pretty nigh the lower

end of the brood combs as cold weather approaches in the fall, this is generally where the last brood emerges, and this is where the empty cells are found, if there is any in the hive as the winter advances, the bees ascend higher and higher just in proportion as they consume the honey from the upper edge of their cluster—when spring opens we generally find the main body of the cluster over two-thirds of the distance from bottom to top of the combs, this is where they commence to rear brood largely, although they may have had some for weeks or months previous, yet as it emerges the cluster moves upward, hence on the appearance of warm weather in the spring quite enough combs are empty in the lower part of the hive, to permit pruning without interfering with the brood or eggs —it probably would be otherwise with bees wintered in a warm room. But little now remains to be done until the swarming season arrives, except to put on the honey boxes, as the clover season approaches.

Where to Obtain Rights.

For hives, individual, township, county or state rights for Harbison's Improved Movable Comb Bee Hive, apply to John S. Harbison, Sacramento City, California, for all territory on the Pacific Coast.

In the State of Iowa, to J. H. Dickey, Bellevue, Jackson county, Iowa.

In the States of Michigan, Indiana and Kentucky to A. F. Moon, Paw Paw, Van Buren county, Michigan.

In New Jersey or adjoining territory to George Henry, Hammonton, Atlantic county, N. J.

In Ashtabula county, Ohio to O. B. Sparry, Ashtabula, Ohio.

In Butler county, Pa., to A. B. Tinker, Butler, Pa.

In Mercer, Lawrence, Beaver, Allegheny, Washington, Westmoreland, and the four townships in the south west corner of Butler county, Pa. and Columbiana and Jefferson counties in Ohio, and the Pan-handle of Virginia, to A. Stewart & Co., New Brighton, Beaver county, Pa.

For all other territory apply to W. C. Harbison, Chenango, Lawrence county, Pa.

Or to A. Stewart, Fallston, Beaver county, Pa.

References.

This hive having been first invented and introduced in California, where its merits have been tested by practical apiarians who have thousands of dollars invested in bees, men who are able to discriminate between a good hive and a bad one, who are familiar with our mode of managing bees, and can speak from personal knowledge of the favorable results attending it.

California then is at present the proper place to enquire of its merits, and we take great pleasure in giving the names of the following gentlemen for references.

L. Warner, Sacramento, Cal.
Rev. O. C. Wheeler, Sacrameto, Cal.
Rev. Mr. Shuck, Sacramento, Cal.
Jefferson Lake, Sacramento, Cal.
Daniel Flint, Sacramento, Cal.
L. Ross, Sacramento, Cal.
I. V. Hoag, Washington, Yolo county Cal.
H. Hoag, Washington, Yolo county, Cal.
Isaac Hoag, Washington, Yolo county, Cal.
John C. Fall, Marysville, Cal.
Mr. Baldwin, Marysville, Cal.
Mr. Hecks, Cosumnes Valley, Cal.
Mr. Cantwell, Cosumnes Valley, Cal.
Mr. Pardee, Ione City, Cal.
Col. C. M. Weber, Stockton, Cal.
Dr. Grattan, Stockton, Cal.
A. Wolff, Stockton, Cal.
Rev. Hiram Hamilton, Santa Clara, Cal.
Capt. Baxter, Napa Valley, Cal.
Mr. Childs, Las Angelos, Cal.
Nath. P. Simmons, Sacramento, Cal.
J. V. Hoag, Washington, Yolo county, Cal.
Joseph Hull, Sacramento, Cal.
J. Lewis Shuck, Sacramento, Cal.